

IN THE CLAIMS:

1. (currently amended) In a MOSFET transistor with a reactive metal gate electrode, a method for protecting the gate electrode from an underlying gate insulator, the method comprising:

forming a gate insulator overlying a channel region;

forming a gate electrode including:

a first metal layer, which is a barrier, overlying the gate insulator, having a thickness of less than 5 nanometers (nm); and,

~~forming a second metal layer gate electrode~~ overlying the first metal layer barrier;

wherein the gate electrode has [[with]] a work function
exclusively responsive to [[the]] a second metal layer; and,

~~wherein the second metal is a material~~ selected from a group
~~including~~ consisting of Pt, NbO, Pd, and Nb.

2. (currently amended) The method of claim 1 wherein forming a ~~second metal gate electrode~~ including a second metal layer includes forming a second metal layer gate electrode having a thickness of greater than about 10 nm.

3. (currently amended) The method of claim 2 wherein forming a gate electrode including a first metal layer barrier includes forming a first metal layer barrier having a thickness of greater than 1.5 nm, and less than 5 nm.

4. canceled

5. (currently amended) The method of claim 1 wherein forming a gate insulator overlying a channel region includes forming a gate insulator from a material selected from the group consisting of ~~including~~ SiO₂, high-k dielectrics such as HfO₂, ZrO₂, Al₂O₃, La₂O₃, HfAlO_x, and HfAlON, and binary, ternary, and nitrided metal oxides.

6. (currently amended) The method of claim 1 wherein forming a gate electrode including a first metal layer ~~barrier~~ includes forming the first metal layer ~~barrier~~ from a material selected from the group consisting of ~~including~~ binary metals such as TaN, TiN, and WN.

7. (currently amended) The method of claim 6 wherein forming a ~~second metal~~ gate electrode includes forming a ~~second metal~~ gate electrode having a high work function.

8. (currently amended) The method of claim 7 wherein forming a ~~second metal~~ gate electrode with a high work function includes forming a gate electrode including a ~~[[the]]~~ second metal layer being selected from the group consisting of ~~including~~ Pt and Pd.

9. (currently amended) The method of claim 6 wherein forming a ~~second metal~~ gate electrode includes forming a ~~second metal~~ gate electrode having a low work function.

10. (currently amended) The method of claim 9 wherein forming a ~~second metal~~ gate electrode with a low work function includes

~~forming a gate electrode including a second metal layer selected selecting the~~
~~second metal~~ from the group consisting of including Nb and NbO.

11. (currently amended) The method of claim 1 wherein
forming the gate electrode ~~establishing a gate~~ work function exclusively
responsive to the second metal layer includes establishing a threshold voltage
(Vth).

12. (currently amended) The method of claim 1 wherein
forming a gate electrode including a first barrier metal layer overlying the
gate insulator includes the first metal layer acting as a barrier to prevent
~~preventing~~ the migration of oxygen from the gate insulator to the second
metal layer gate electrode.

13-26. canceled

27. (currently amended) In a MOSFET transistor with a
reactive metal gate electrode, a method for protecting the gate electrode from
an underlying gate insulator, the method comprising:

forming a gate insulator overlying a channel region;

forming a gate electrode including:

a first metal layer, which is a barrier, overlying the gate
insulator; and,

~~forming a second metal layer gate electrode~~ overlying the
first metal layer barrier;

wherein the gate electrode has ~~having~~ a work function selected
from a group consisting of a high work function and a low work function;

wherein the gate electrode has a high work function exclusively responsive to the second metal layer being selected from a group consisting of Ir, Re, Ni, Mn, Co, RuO₂, Pd, Mo, and TaSiN; and,

wherein the gate electrode has a low work function exclusively responsive to the second metal layer being selected from the group consisting of Nb and NbO.

28. canceled

29. (currently amended) In a MOSFET transistor with a reactive metal gate electrode, a method for protecting the gate electrode from an underlying gate insulator, the method comprising:

forming a gate insulator overlying a channel region;

forming a gate electrode including:

a first ~~[[WN]]~~ metal layer of WN, which is a barrier,
overlying the gate insulator, having a thickness of less than 5 nanometers (nm); and,

~~forming a second metal layer gate electrode overlying the~~
first ~~[[WN]]~~ metal layer barrier;

wherein the gate electrode has ~~[[with]]~~ a work function exclusively responsive to a ~~[[the]]~~ second metal layer, ~~the second metal~~ selected from a group consisting of Pt, Pd, Nb, and NbO.